DOCUMENT RESUME

ED 061 458 VT 015 024

AUTHOR	Zener, Thelma Baldwin; Schnuelle, Leslie
TITLE	An Evaluation of the Self-Directed Search: A Guide to Educational and Vocational Planning.
INSTITUTION	Johns Hopkins Univ., Baltimore, Md. Center for the Study of Social Organization of Schools.
SPONS AGENCY	Office of Education (DHEW), Washington, D.C.
REPORT NO	JHU-R-124
BUREAU NO	BR-6-1610
PUB DATE	Feb 72
GRANT	OEG-2-7-061610-0207
NOTE	70p.
EDRS PRICE	MF-$0.65 HC-$3.29
DESCRIPTORS	*Career Planning; Decision Making; *Evaluation Criteria; High School Students; *Occupational Choice; Occupational Guidance; *Self Evaluation; *Testing; Test Reliability; Test Validity; Vocational Counseling; Vocational Interests
IDENTIFIERS	Self Directed Search

ABSTRACT

In an evaluation of the Self-Directed Search (SDS), a self-administered vocational counseling experience based on Holland's theory of vocational choice and his occupational classification, a total of 1,092 students in 10th, 11th, and 12th grades in four high schools were divided into three treatment groups. One group took the regular, published version of the SDS, while the second group took a version of the SDS which did not contain the "self-directed" aspects. The third group served as a control, receiving no treatment. Evaluative criteria were selected that would assess the special effects of the SDS as well as effects commonly expected from more typical vocational counseling procedures. Results revealed that both versions of the SDS were effective in increasing the number of occupations being considered, but students taking the published version were considering more appropriate occupations based on their activities, competencies, interests, and self-ratings than those who took the non-self-directed version. In addition both versions of the SDS were effective in increasing satisfaction and certainty about vocational plans, and the effectiveness of both versions was evaluated as moderately positive by the students. Sample student interest questionnaire, opinion form, and vocational guidance questionnaires are appended. (Author/SB)

ED 061 458

OE-BR-6-1610
VT

Center for Social Organization of Schools

REPORT No. 124

FEBRUARY, 1972

AN EVALUATION OF THE SELF-DIRECTED SEARCH: A GUIDE TO EDUCATIONAL AND VOCATIONAL PLANNING

THELMA BALDWIN ZENER

LESLIE SCHNUELLE

The Johns Hopkins University

VT015024

STAFF

John L. Holland, Director

James M. McPartland, Assistant Director

Virginia Bailey

Zahava D. Blum

Judith P. Clark

James S. Coleman

David DeVries

Keith Edwards

Gail Fennessey

James Fennessey

Stephanie Freeman

Ellen Greenberger

Rubie Harris

Edward J. Harsch

Robert J. Hogan

Karen Jaworski

John H. Hollifield

Nancy L. Karweit

Steven Kidder

Hao-Mei Kuo

Samuel Livingston

Edward L. McDill

Rebecca J. Muraro

Dean Nafziger

Jeanne O'Connor

Peter H. Rossi

Dorothy Schleisman

Leslie Schnuelle

Julian C. Stanley

Diana F. Ward

Phyllis K. Wilson

ED 061 458

U.S. DEPARTMENT OF HEALTH,
EDUCATION & WELFARE
OFFICE OF EDUCATION
THIS DOCUMENT HAS BEEN REPRODUCED EXACTLY AS RECEIVED FROM THE PERSON OR ORGANIZATION ORIGINATING IT. POINTS OF VIEW OR OPINIONS STATED DO NOT NECESSARILY REPRESENT OFFICIAL OFFICE OF EDUCATION POSITION OR POLICY.

An Evaluation of the Self-Directed Search: A Guide To Educational and Vocational Planning

Grant No. OEG-2-7-061610-0207

Project No. 61610-05-02

Thelma Baldwin Zener

Leslie Schnuelle

Report No. 124

February, 1972

Published by the Center for Social Organization of Schools, supported in part as a research and development center by funds from the United States Office of Education, Department of Health, Education, and Welfare. The opinions expressed in this publication do not necessarily reflect the position or policy of the Office of Education, and no official endorsement by the Office of Education should be inferred.

The Johns Hopkins University

Baltimore, Maryland

INTRODUCTORY STATEMENT

The Center for Social Organization of Schools has two primary objectives: to develop a scientific knowledge of how schools affect their students, and to use this knowledge to develop better school practices and organization.

The Center works through five programs to achieve its objectives. The Academic Games program has developed simulation games for use in the classroom. It is evaluating the effects of games on student learning and studying how games can improve interpersonal relations in the schools. The Social Accounts program is examining how a student's education affects his actual occupational attainment, and how education results in different vocational outcomes for blacks and whites. The Talents and Competencies program is studying the effects of educational experience on a wide range of human talents, competencies, and personal dispositions in order to formulate--and research--important educational goals other than traditional academic achievement. The School Organization program is currently concerned with the effects of student participation in social and educational decision-making, the structure of competition and cooperation, formal reward systems, effects of school quality, and the development of information systems for secondary schools. The Careers and Curricula program bases its work upon a theory of career development. It has developed a self-administered vocational guidance device to promote vocational development and to foster satisfying curricular decisions for high school, college, and adult populations.

This report, prepared by the Careers and Curricula program, evaluates the effects of the Self-Directed Search, a self-administered vocational guidance device, on 10th, 11th and 12th grade students in four high schools.

Acknowledgments

The authors wish to thank the following people in the Baltimore schools for their ideas, interest, and help in making this study possible: A. Barrett Davidson, Frederick S. Eyster, Sister Marie Yetter, D.C., Father Eugene, O.S.M.C., John Kaminsky, and James Kristoff. For their skillful assistance in processing the data, we are indebted to Hao-Mei Kuo and Thomas Feshbach. Finally, we are indebted to John Holland and Keith Taylor who provided guidance throughout the conduct of the study.

Abstract

This report is an evaluation of the Self-Directed Search (SDS), a self-administered vocational counseling experience. The sample was a total of 1,092 students in the 10th, 11th and 12th grades in four high schools. Three treatment groups were used: (1) a group that took the regular, published version of the SDS, (2) a group that took a version of the SDS which did not contain the "self-directed" aspects, and (3) a control group that received no treatment.

Evaluative criteria were selected that would assess the special effects of the SDS as well as the effects commonly expected from more typical vocational counseling procedures. The results of the evaluation were:

1) Both versions of the SDS were effective in increasing the number of occupations being considered. The students who took the published version of the SDS were considering more appropriate occupations (based on their activities, competencies, interests and self-ratings) than those who took the non-self-directed version.

2) Both versions of the SDS were effective in increasing satisfaction and certainty about vocational plans. Students taking either version of the SDS reported feeling more satisfied with their current occupational choice. Students taking the published version reported less need to see a counselor immediately. The control group indicated less satisfaction and certainty by expressing a greater need for information about specific jobs and training programs.

3) The published version of the SDS was more effective in increasing students' understanding of the theory behind the SDS than the non-self-directed version.

4) The effectiveness of both versions of the SDS was evaluated as moderately positive by the students themselves.

INTRODUCTION

This report is an evaluation of the Self-Directed Search (SDS), a self-administered vocational counseling experience. The evaluation is based on the use of the SDS with high school students. It focuses on how the experience affects a student's thoughts and activities concerning vocational choice and also on the student's own evaluation of his experience. The test-retest reliability of the SDS scales and the validity of the final summary code are also examined.

The SDS is based on Holland's theory of vocational choice (Holland, 1966) and his occupational classification (Holland, Viernstein, Kuo, Karweit and Blum, 1970). The SDS consists of two booklets: an assessment booklet and an occupational classification booklet. The assessment booklet includes check lists of preferred activities, competencies, occupational preferences and self-ratings. At the end of the assessment booklet, the student scores his responses and organizes his results into a single profile which indicates his resemblance to each of Holland's personality types: Realistic, Investigative, Artistic, Social, Enterprising, and Conventional. The letters of the three highest scale scores form his three-letter summary code. For example, a person with the code RIC would resemble the Realistic, Investigative, and Conventional personality types in that order of importance.

The occupational classification includes a list of 414 occupations which are organized according to the same three-letter codes. Thus a student uses his code, obtained from the assessment booklet, to search for suitable occupations in the occupational classification booklet. The final steps in the assessment booklet ask the student to list the

occupations which match his code exactly and then to list occupations which correspond to all permutations of the letters in his code. (See Holland, 1971 for further description of the SDS).

There is an extensive and historic literature concerning the methods, difficulties, and importance of objectively assessing the effects of counseling (Froehlich, 1949; Travers, 1949; Tyler, 1942; Wrenn and Darley, 1942; Williamson and Bordin, 1941; and more recently Hosford and Briskin, 1970). Despite these years of attention, only a few successful evaluations of vocational counseling have been reported. These usually deal with the effects of extensive long-term counseling programs (Hoyt, 1955; Loughary, 1966; Nissenson, 1948; and Ryan, 1967) and are not comparable to the evaluation of the short-term experience of the SDS.

In order to fairly evaluate the short-term experience and, at the same time, produce results comparable with previous assessments of more extensive counseling programs, we needed (1) to select criteria that would assess the special effects of the SDS (recall and application of SDS information), and (2) to include criteria that are commonly used to evaluate more typical vocational counseling procedures. The selected criteria were:

1. The student will be able to recall his three-letter code, interpret it, and match occupations to corresponding personality types.
2. The student will consider more occupations and those occupations will be consistent with his three-letter Holland code.

3. The student will be more certain and satisfied with his vocational plans.
4. The student will be more interested in finding out specific information about jobs and training programs.
5. The student will engage in increased vocational information-seeking behavior.
6. Three weeks after taking the SDS, the student who had chosen an occupation would have acquired more information about it.

These criteria include several that are commonly used for assessing vocational counseling procedures. For young people, increasing the number of occupational alternatives is generally considered an important aspect of the vocational decision-making process (Clarke, Gelatt, and Levin, 1965). Becoming more certain about vocational plans is central to Super's concept of the crystalization of choice. Finally, information-seeking is a rational and defensible criterion (Krumboltz and Schroeder, 1965). In addition to these criteria, Crites' measure of vocational maturity was also used.

To test the effects of the SDS, students taking the SDS were compared to a "no-treatment" group who received whatever vocational counseling the schools and families normally provide. It was expected that students taking the SDS would be superior to the control group on all six of the criteria. In addition, an alternative treatment was devised that would permit a specific test of a somewhat controversial aspect of the SDS, namely, its self-administered format. Holland has argued that students will benefit from the privacy and autonomy provided by the SDS counseling experience; others have expressed doubt that counseling can be effective

in the absence of a counselor. Therefore, a version of the SDS was constructed which provided students with the same information as the self-administered SDS (i.e., the three-letter Holland code and a list of relevant occupations) but which was scored, summarized and interpreted for the student by an experimenter rather than by the student himself. The effectiveness of the two versions of the SDS is compared on all six criteria.

To obtain the students' evaluations of the SDS, students were asked to judge whether the SDS had affected their feelings of certainty about their occupational choice, had increased their perception of occupational choices, and whether they thought it was reasonable and would recommend it to a friend. The students' evaluations of the self-administered and other-administered versions of the SDS will be compared.

Substantial evidence exists to support the validity of scales included in the SDS and the validity of the theory on which it is based (see summary in Holland, 1971). The evidence bearing directly on the entire SDS is based on data collected at the University of Maryland where it was given to 5000 entering freshmen. These data have been used to demonstrate the internal consistency of the individual scales and the strong relationships between all of the individual scales and their corresponding summary scales (Holland, 1971). The manual accompanying the SDS also includes a matrix of all relationships among the individual scales. The matrix again shows the large correlations between scales measuring the same personality type and supports the hexagonal relationship among the six personality types which Holland

proposes in his theory (Holland, Whitney, Cole, & Richards, 1969). Edwards and Whitney (in press) present a factor analysis of the SDS scales which demonstrates this hexagonal relationship more clearly. Finally, O'Connell and Sedlacek (1971) readministered the SDS to 65 of the University of Maryland sample and report a test-retest reliability coefficient (average rank-order correlation) for the summary code of .92 over a seven-month interval. Thus, the data collected at the University of Maryland demonstrate the existence of the predicted relationships among and within the scales of the SDS and a substantial degree of stability over time.

This report will reexamine some of these indices of reliability and validity using data collected with younger students. Specifically, the SDS codes will be compared with the codes of the occupations students are currently considering, and the stability of the scales and the summary code over a three-week time interval will be described.

METHOD

Subjects

Four high schools in Baltimore volunteered to participate in the experiment. The high school guidance counselors identified the populations to be tested within each school. In three high schools students from only one grade were involved. In each of these schools, students were randomly assigned to experimental treatments by using class lists. In the fourth high school, two grades were used. In this school, students within each grade were randomly assigned to the treatments. Thus, the experiment was replicated across five blocks of subjects, three from different high schools and two from different grades within the same high school. Descriptive information about the students was obtained from a short questionnaire (Student Interest Questionnaire) which was administered before the experiment. This information about students in each block is presented in Table 1. The sample included males and females in grades 10, 11, and 12, from low and middle SES backgrounds. The sophomore students were attending Roman Catholic schools. The junior and senior students were attending public city high schools. In one public school, students in all four curricula are represented. In another public school, all students in the study were enrolled in an accelerated, scientific, college-prep curriculum.

The observations on one block of subjects (Block 0) were collected in a pilot test of the experimental procedures and questionnaires. Because the experimental design and the questionnaires were modified

TABLE 1

CHARACTERISTICS OF STUDENTS IN EXPERIMENTAL BLOCKS

	High School and Grade	% Male and Female Students		% Low and Middle SES		Racial Composition	Curriculum	Selection Procedure	Type of High School
		Boys	Girls	Low	Middle				
BLOCK 0 (pilot)	High School 1 Grade 10 (N=133)	0%	100%	52%	48%	White (96%)	Undecided	All Sophomores	Roman Catholic Parochial
BLOCK 1	High School 2 Grade 10 (N=214)	100%	0%	52%	48%	White (99%)	College Prep.	All Sophomores	Roman Catholic Parochial
BLOCK 2	High School 3 Grade 11 (N=284)	51%	49%	80%	20%	Black (100%)	General 29% Technical 9% Business 37% College Prep. 25%	3 Classes from each Curriculum Group	Public
BLOCK 3	High School 3 Grade 12 (N=316)	49%	51%	82%	18%	Black (100%)	General 22% Technical 21% Business 31% College Prep. 26%	3 Classes from each Curriculum Group	Public
BLOCK 4	High School 4 Grade 11 (N=145)	100%	0%	34%	66%	White (100%)	Advanced College Prep.	All Advanced College Prep. Juniors	Specialized public school for scientific and technical education

somewhat after the try-out, this block of subjects is eliminated in many analyses.

Experimental Treatments

SDS I. Students in this treatment group took the first published version (1970) of the Self-Directed Search. They worked through the assessment booklet, scoring their responses and determining their summary codes. They then searched the occupational classification booklet for occupations that matched the code exactly, then for the occupations corresponding to all permutations of the code.

SDS II. Students in this treatment took a simplified version of the published SDS (used by SDS I) that provided essentially the same information as the published version while removing the "self-directed" aspects of the treatment. As in SDS I, a student taking SDS II began by listing his "occupational daydreams." Then he took the Vocational Preference Inventory. This inventory, which asks a student to check the occupations which interest him, was developed by Holland (1965). The students' responses to the VPI were scored immediately by a monitor, who then gave the students their descriptive three-letter codes. The monitor also handed each student a list of occupations from the occupational classification booklet which included all occupations corresponding to the first letter of his code. For example, a person with the code SEA was handed a sheet containing all Social occupations and told that those occupations coded SEA were ones he might especially want to consider.

This treatment (SDS II), therefore, resembles the published SDS (SDS I) in that the person lists his "occupational daydreams" and receives a three-letter code immediately after completing the test which he can use to identify suitable occupations. The SDS II differs from the published version (SDS I) in at least three ways: (1) the student does not organize his own responses into Holland's theoretical classification of personality types, (2) he does not search through the entire occupation classification, but instead receives a list of only those occupations which correspond to the first letter of his code, and (3) the student's assessment is based only on his preference for occupational titles.

No-Treatment. During the experimental session, students assigned to the no-treatment group remained in their regular classrooms except in High School 2 where they were given a special study hall in another part of the school.

Questionnaire Instruments[1]

Student Interest Questionnaire. This questionnaire was used to obtain background information about the students: sex, age, grade-level, parents' occupations, high school curricula, and academic success. The last two items of the questionnaire assess a student's interest in participating in a counseling experiment. A difference between the sampling procedure used here and the typical procedure employed in studies of counseling was that our subjects were randomly selected and not allowed

[1] Copies of all Questionnaires are included in Appendix.

to volunteer. Therefore, the student interest items were included to identify students who might have volunteered, if it became necessary to clarify unexpected results.

Student Opinion Form. Most items in this short questionnaire elicited student evaluation of the SDS I and the SDS II treatments. Two items ("I would recommend the SDS to a friend" and "My summary code seems reasonable") were so highly correlated (r = .82) that they were combined and used as a single measure of student evaluation. An item which asks the student to recall and interpret his summary code was included to assess the student's understanding of the information he received.

Vocational Guidance Questionnaire I. Items 1 and 2 on this questionnaire are questions about the student's vocational plans: what and how many alternatives he is considering, and whether he has a strong preference for one of those alternatives. Items 3 and 4 ask about the student's feelings of satisfaction with his vocational plans and the urgency of his needs to see a vocational counselor. Items 5 and 6 assess the student's understanding of Holland's concepts for matching personalities and occupations, and item 7 assesses the student's need for information. The first three parts of item 7 are combined to measure the student's need for general information about himself and the world of work. The last three parts are combined to measure his need for specific information about occupations and training requirements.

Item 8 is a shortened version of Crites' Vocational Development Inventory IV (Crites, 1969). The twenty items having the highest biserial correlations with the total test score for 10th, 11th, and 12th grades combined were selected (Crites, 1969). No item was included whose

correlation for any of the grades separately was less than .30. And three items which seemed redundant in content were omitted. These restrictions resulted in a 17-item scale.

Item 9 is a shortened version of an Interpersonal Competency Scale (Holland and Baird, 1968). Items with redundant content were omitted, leaving a nine-item scale.

Vocational Guidance Questionnaire II. This questionnaire was administered three weeks after the vocational guidance treatments. The first part contains three items. The first item asks what and how many occupational alternatives are now being considered. Items 2 and 3 are measures of information-seeking activity. Item 3 is adapted from Krumboltz's (1965) reported measure of frequency and variety of information-seeking behavior.

The second part of this questionnaire was completed only by students who had decided on a "first" occupational choice. This part assesses a student's occupational knowledge using a measure devised by Banducci (1968). A student's answers are scored for accuracy using the Dictionary of Occupational Titles, Volume II as a criterion.

The correspondence between the items in the questionnaires and the criteria for evaluation is shown in Table 2.

Procedure

All students were asked to fill out the Student Interest Questionnaire. In High Schools 1 and 2 (Blocks 0 and 1) this was administered by teachers the week before the SDS administration. In the other two schools (Blocks 2, 3, and 4) it was given to the experimental groups

TABLE 2

ASSESSMENT OF EVALUATIVE CRITERIA

CRITERIA	QUESTIONNAIRE	ITEM	SOURCE
Understanding Holland's Theory	SOF[a] VGI[b]	2 6	
Number and Appropriateness of Considered Occupations	VGI VGII[c]	1 1	
Satisfaction and Certainty of Vocational Plans	VGI VGI	3 4	Banducci (1968)
Need for information about specific jobs and training programs	VGI	7	
Information-Seeking	VGII	2,3	Krumboltz (1965)
Knowledge of Chosen Occupation	VGII	Part II	Banducci (1968)
Vocational Maturity	VGI VGI	8 9	Crites (1969) Holland (1968)
Student Evaluation	SOF	1-a to e	

[a]SOF = Student Opinion Form

[b]VGI = Vocational Guidance I

[c]VGII = Vocational Guidance II

immediately before the experimental treatment, and at the same time to the control-group students, who were in their classrooms.

On the day of the experiment, students who had been assigned to the experimental groups were asked to report to the school cafeteria. (Students in the control group remained in their regular classes, except in high school 2 where they were brought to the auditorium and given a study hall.) Materials for the SDS I and SDS II treatments were randomly distributed to seating places before the students entered. Thus, the assignment of students to experimental treatments was determined when they sat down.

Instructions were given at the beginning of the session. Students were told that there were two versions of a new vocational guidance instrument being tried out. First, brief instructions for SDS I were given. The students were told that all directions were printed in the booklets and that it should be completely self-explanatory. They were encouraged, however, to raise their hands and ask for assistance if they had any questions. Then instructions for the SDS, version II, were given. Students were told that complete instructions were printed in the booklets but that they could get assistance by raising their hands whenever necessary. They were told that when they finished, they were to take their booklets to one of the monitors who would score and interpret their booklets. As students worked on their SDS booklets, monitors circulated around the room answering questions. There was one monitor for approximately every 25 students taking SDS I and one monitor for approximately every 15 students taking SDS II. When the students taking SDS II began to finish the VPI, their monitors sat down at assigned

tables and began scoring. The other monitors continued to answer student questions.

When students finished their booklets they took them to the monitors. The monitors who were handling SDS I took the booklets, returned the last two pages to the students, and handed every second student a Student Opinion Form. Students were asked to put their names on these forms, complete them before leaving the session, and return them to a monitor. The monitors handling SDS II took the students' booklets and performed the scoring and interpreting procedure previously described. These monitors also asked every second student to complete the Student Opinion Form.

Students who had finished the experimental tasks sat in their seats and studied their own class work until the session ended. Sessions lasted for two class periods -- about 1½ hours.

The next morning, one-half of the students were asked to complete Vocational Guidance Questionnaire I. These questionnaires were administered in designated classes by classroom teachers. The teachers were given short written instructions which specified which students were to complete the questionnaire and how to answer student questions. The only instructions given to the students were printed on the questionnaire.

Approximately three weeks later the same teachers administered Vocational Guidance Questionnaire II to all of the students in the designated classrooms. As soon after this administration as it was feasible for the schools, all participating students were brought into the cafeteria and given the published version of the SDS (SDS I).

This administration was a retest for the students who had previously taken SDS I.

Experimental Design

The essence of the experiment concerned the comparison of the two versions of the SDS and a no-treatment condition. The effects of these "treatments" were observed on three different follow-up questionnaires. The first questionnaire (the Student Opinion Form) was a student rating of the SDS and thus it was not given to the control group. The other two questionnaires (Vocational Guidance Questionnaire I, and Vocational Guidance Questionnaire II) were given to all three treatment groups. Since it seemed plausible that completing the questionnaires might interact with the effects of the treatments in some way, completion of the first and second questionnaires was included as a factor in the analysis of the results observed on the second and third questionnaires.

The experimental materials were first tried out in high school 1 (Block 0 in Table 1). Since this try-out was conducted to detect problems in the questionnaires, all participating students were asked to complete them. Therefore, treatment and questionnaire effects were confounded in observations made in this block and this school was omitted in analyses of treatment effects. The complete experiment was replicated, however, across the other four blocks of students.

Since completion of preceding questionnaires is an experimental factor, the design of the experiment becomes increasingly complex for data gathered on the three successively administered questionnaires.

The design for analyzing the several effects observed on the first questionnaire, the Student Opinion Form, was a relatively simple multivariate analysis of variance comparing SDS I to SDS II and blocking on the four grades within high schools. The design for analyzing data gathered on Vocational Guidance I is more complicated. It is also a multivariate analysis of variance, but a control group and a nested factor (completion of the Student Opinion Form) have been added. The portion of the design designated by the columns (ignoring the rows) in Figure 1 shows the arrangement of factors for this analysis. Again, the design was replicated across the four blocks and a blocking factor was also included in the analysis. The entire design shown in Figure 1 (with the addition of the blocking factor) was used in the multivariate analysis of effects observed on the final questionnaire.

Index of Similarity. The analysis of the data made it necessary to be able to evaluate the similarity between the three-letter summary code and any other three-letter Holland code. For example, to determine whether the information the student received from the SDS is consistent or inconsistent with his expectations, a student's summary code is compared to the code of his latest "occupational daydream." Also, in order to evaluate the effect of the SDS on subsequent occupational considerations, it is necessary to compare a student's summary code to the codes of all the occupations a student lists as considerations after taking the SDS.

These problems required that a numeric index of similarity be devised. This similarity index ranges from 0 to 6 and is inversely

Figure 1. Experimental Design which was replicated across four blocks of subjects.

	EXPERIMENTAL				CONTROL
	SDS I		SDS II		
	Student Opinion Form	No Student Opinion Form	Student Opinion Form	No Student Opinion Form	
Vocational Guidance I					
No Vocational Guidance I					

related to the probability of obtaining a particular occupational code by chance -- given a particular Holland summary code. Table 3 describes the 7 levels of code similarity, shows the probability of obtaining various combinations by chance, and indicates the number assigned to each level in the indexing scheme.

Sources of Variation. A brief description of the experimental design and the strategy used to identify the important sources of variation is necessary. The factors which were manipulated in the experiment were shown in figure 1. These are (1) treatment (SDS I or II vs. control), (2) self-directed administration (SDS I vs. II) and (3) the previously administered questionnaire(s). There was also a blocking factor since the experiment was replicated across four high school groups.

Effects which are associated with the first two factors are of primary importance since the central purpose of this study is to identify the effects associated with the SDS (i.e. how it compares to no-treatment and how it compares to a non-self-directed treatment). The questionnaire factors were included to provide information about whether or not the variables measured were affected by our assessment techniques, or more importantly, whether the questionnaires added to or subtracted from the effects of the treatment.

The blocking factor, which includes the differences between high schools and between grade-levels, was expected to account for a considerable portion of variance since there were such great differences in the high school populations. These differences between blocks would not affect the interpretation of the effectiveness of the SDS, however,

TABLE 3

Scale Used for Describing Similarity between SDS Summary Code and any other three-letter Code

Verbal Description	Chance Expectancy	Index
1st letter of SDS summary code is not included in other (e.g. RIC, CES)	.500	0
1st letter of SDS summary code matches any letter in the other code (e.g. RIC, CRE)	.500	1
1st and 2nd letters of SDS summary code match any two letters in the other code (e.g. RIC, IER)	.250	2
1st letter of SDS summary code matches first letter of other code (e.g. RIC, REA)	.167	3
All three letters of SDS summary code match letters of other code in any order. (e.g. RIC, ICR)	.125	4
1st and 2nd letters of SDS summary code match 1st and 2nd letters of other code (e.g. RIC, RIE)	.033	5
Letters and order exactly the same	.008	6

Note. - Cases which fit more than one catagory are given the scale value of the highest catagory.

unless there were block-by-treatment interactions. A significant block-by-treatment interaction would be very important since it would indicate that the SDS was more effective in some high school populations than in others.

In addition to the manipulated and blocking factors, three other factors were identified which would possibly interact with the effectiveness of the treatment. These were: (1) the sex of student, (2) the SES level of student's family, and (3) the consistency of the student's SDS summary code with his previous occupational plans. Sex and SES information was obtained from the Student Interest Questionnaire. The consistency information was obtained by comparing the student's obtained summary code with the code of his first "occupational daydream." Using the devised index of code similarity (see p. 15), students with scores of 0-2 comprised the inconsistent group, and students with scores 3-6 comprised the consistent group. (This consistency of information factor is nested within the experimental treatments. Consistency scores could not be assigned to the control group.)

The strategy in all analyses was to begin by assuming a simple model. It was assumed that the few factors manipulated in the study and a few of their interactions were the only real sources of variation affecting the observed variables. Thus most interactions and the three non-manipulated factors, described in the preceding paragraph, were ignored. This simple model was subjected to a goodness-of-fit test. If not rejected, the simple model was used to analyze and assess the significance of the observed effects.

RESULTS AND DISCUSSION

Effects of the SDS

Analysis I: Student Opinion Form. On the Student Opinion Form, students in the SDS I and SDS II treatment groups reported their evaluations and testimony concerning the effectiveness of the SDS. (The specific five evaluation variables are listed in Table 4.) The goodness-of-fit test justified the use of a simple model and, consequently, the analysis tested only effects associated with SDS I and SDS II differences and with block differences. The goodness-of-fit test indicated that the three non-manipulated factors (sex, SES and consistency of SDS code) and all of the interactions could be ignored as non-significant sources of variation. The questionnaire factors were not included because no questionnaires had preceded this one. The treatment-control differences could not be considered because the control group did not respond to the Student Opinion Form.

In the analysis using the simple model, only the multivariate F for block differences was significant. The block differences are difficult to interpret because the populations in the four blocks differ on so many dimensions. Nevertheless, because potential users may want to know which populations reacted especially positively or negatively, the means for the four groups are shown in Table 4. (Descriptions of the populations in each block are included in Table 1.)

The students in Block 4 (those enrolled in an advanced, scientific, college-prep curriculum) were apparently somewhat more skeptical than the others that the experience had affected their thoughts about

TABLE 4

MEAN EVALUATION RATINGS OBTAINED IN FOUR HIGH SCHOOLS

Variable	Maximum Score	Blocks (High Schools and Grades) 1 (10th)	2 (11th)	3 (12th)	4 (11th)
Evaluation Scale	10	7.69	7.59	7.72	7.07
"Feel more sure about choice"	5	3.40	3.30	3.76	2.95
"See that choice may not be best"	5	2.76	2.75	2.84	2.22
"See more choices"	5	4.26	3.82	3.97	3.16
Recall of code and its interpretation	2	1.37	1.01	1.31	1.72

occupational choice. As might be expected, the same academically-able students were also much better able to recall the information presented by the two versions of the SDS. Despite these differences, however, it should be pointed out that the blocks did not differ significantly on the general evaluation scale. All blocks of students rated both versions of the SDS as moderately positive.

The multivariate F testing differences between the students' evaluation of the two versions of the SDS was not significant. However, since a description of the students' evaluation of the published version may be useful, the mean ratings given to the two versions are presented in Table 5.

The lack of strong differences in the students' evaluations of the two versions is surprising because the two versions differed very much in the amount of student effort they required. In taking the published version (SDS I), the typical student worked for approximately 50 minutes. He did his own computational work and interpreted his own results. In the alternative version, the student worked for approximately 20 minutes and then had his test scored and interpreted for him.

Regardless of comparative statements, the mean ratings of the regular, published version of the SDS can be described as moderately positive.

Analysis II: Vocational Guidance I. This questionnaire was designed to assess students' thoughts about vocational choice on the day following the SDS experience. Nine different variables were assessed in the multivariate analysis of variance (see Table 6). The goodness-of-fit test again justified the use of a simple model to account for the

TABLE 5

MEAN RATINGS OBTAINED FOR SDS I AND
SDS II ON STUDENT OPINION FORM

	Maximum Score	Mean SDS I	Mean SDS II	Univariate F	Step-d F
Evaluation Scale	10	7.39	7.65	.96	.96
"Feel more sure about choice"	5	3.19	3.52	4.33*	3.37
"See that choice may not be best"	5	2.58	2.70	.49	.11
"See more choices"	5	3.74	3.85	.52	.15
Recall of code and its interpretation	2	1.45	1.25	5.02*	4.89*

Note: Multivariate F = 1.90; df 5, 163 n.s.

* $p < .05$

variation in these variables. In addition to the grand mean, the parameters included in this model were (1) the treatment factor, (2) the self-directed administration factor, (3) the blocking factor, (4) the Student Opinion Form, and (5) the interaction of the Student Opinion Form with the treatment. Thus, the three non-manipulated factors and all of the interactions except the one in the simple model were eliminated by the goodness-of-fit test.

The most important outcome of the multivariate analysis was the large effect associated with the treatment factor.[1] The results of this analysis, which contrasts students receiving either SDS I or SDS II to the control group, are shown in Table 6. It is apparent that the vocational treatments had a significant effect on the students' thoughts concerning occupational choice. Students who had received a treatment on the previous day were considering a greater number of occupational alternatives. They were more satisfied with their current choice. They expressed a smaller need for acquiring general information about themselves and occupations and also for specific information about certain jobs and training programs. Finally, they demonstrated a better understanding of Holland's concepts for matching personalities and occupations.

The multivariate F for differences between the SDS I and SDS II treatments was not significant. However, two of the univariate F's in this analysis were significant. Since a significant difference between

---

[1]Again, in the analysis of these variables, there was a large effect associated with block differences. Since these differences did not interact with the treatment, however, they are not important for the evaluation of the SDS and will not be discussed here.

TABLE 6

Mean Scores for Treatment and Control Groups
on Vocational Guidance Questionnaire I

Variable	Treatment[a]	Control	Univariate F	Step-Down F
1. Number of occupations being considered	3.70	3.25	14.62***	14.62***
2. Satisfaction with present choice	2.98	2.44	11.66***	12.23***
3. Need to see counselor	2.15 ($\bar{X}_{SDS\ I}$ =1.96 $\bar{X}_{SDS\ II}$ =2.34)	2.40	1.70	2.33
4. Need for general information about self and occupations	10.11	10.88	10.70**	4.76*
5. Need for specific information about jobs and training	11.44	12.05	8.67**	5.70*
6. Vocational Maturity	12.51	12.11	2.85	.31
7. Interpersonal Competency	5.63	5.68	.04	.24
8. Rating of Self-Understanding	3.51	3.41	1.21	.01
9. Knowledge of Holland's Theory	3.20 ($\bar{X}_{SDS\ I}$ =3.60 $\bar{X}_{SDS\ II}$ =2.80)	1.86	19.87***	14.05***

Note: Multivariate F = 6.35; d.f. 9,315; $p < .0001$

[a]Treatment means are based on the SDS I and II groups combined. For the two variables on which versions of the SDS differed significantly, their means are shown separately.

* $p < .05$

** $p < .01$

*** $p < .001$

the two versions of the SDS can affect the interpretation of the previously reported comparison between the combined treatments and the control group, the means for the two versions of the SDS have been presented separately in Table 6 for the two variables where significant differences occurred.

The results shown in Table 6 can be used to examine the effectiveness of the SDS on four of the evaluative criteria which were shown in Table 2. The first is the student's understanding of Holland's theory. Variable 9 is the most direct assessment of this criteria for it was measured by an achievement test item which asked students to match Holland's personality types to occupations. Obviously students who took the published version of the SDS (SDS I) performed better on this matching task.

Further supporting evidence of the superior understanding of Holland's theory gained by students in SDS I can be found in Table 5. Although the multivariate F was not significant in that analysis (Table 5), the differences between the two groups on the last variable in that analysis was significant even in the step-down analysis ($p < .05$). Students taking SDS I were better able to recall and interpret their codes than students taking the alternative version.

In the analysis shown in Table 6, the criterion of satisfaction and certainty of vocational plans was assessed by variables 2 and 3. Students taking either version of the SDS reported feeling more satisfied than the students in the control group did. The other item related to this criterion was particularly affected by the self-directed aspects of the published version of the SDS. Students taking the self-directed

version reported a less urgent demand to see a counselor than students taking the other version of the SDS or students in the control group.

The criterion concerning need for information about specific jobs and training programs was assessed by variables four and five. The difference between the treatment and control groups in their expressed need for general information about themselves and occupations was as expected. It was predicted that information presented in the SDS would reduce some of the students' uncertainty and make them less willing to agree to statements like, "I find this whole business of choosing an occupation so confusing I don't know where to begin." It was also predicted, however, that they would be more interested in acquiring specific information about certain occupations or training programs. This prediction was not confirmed. The control group expressed a greater need for both general and specific information.

One explanation of this unexpected finding might be that the information provided by the SDS generally reduced the students' uncertainty and made them feel less need for acquiring information. It is also possible that the students who were randomly assigned to the control group felt deprived of the vocational guidance given to their classmates and thus expressed a higher need for both general and specific information about vocational choice. Whether the experimental group is unusually low or the control group unusually high in their responses to these items cannot be determined from these data.

The variables related to the criterion of vocational maturity (items six, seven and eight) were not significantly affected by the SDS; that is, students taking the SDS were not significantly different from

the control group on Crites' (1969) Vocational Development Inventory, Holland and Baird's (1968) Interpersonal Competency Scale or on the ratings of self-understanding. Although it was predicted that the SDS would have some small effect on these variables, the non-significant results are not surprising. It is perhaps unrealistic to expect this brief learning experience to immediately affect the general dispositions that are assessed by measures such as Crites' Vocational Development Inventory.

A fifth criterion, the number and appropriateness of considered occupational alternatives, was assessed by the first variable in Table 6. On the day following the SDS, the students who had received either experimental treatment were considering a greater number of occupational alternatives than the control group.

Holland's theory was used to determine the appropriateness of these listed occupations. An appropriate occupation was one whose code corresponded to the student's SDS summary code. Because of this definition of appropriateness, only students from the two experimental groups (for whom summary codes were available) could be used in the analysis. Therefore, a separate comparison was made between the two experimental groups on their lists of considered occupations. Using the previously described similarity index, the code of each occupation was compared to the person's summary code. The mean of these indexes was then computed for each person in order to describe the extent to which his list of considered occupations was consistent with the information he had received on the SDS. These mean indexes for students receiving the two different versions of the SDS were compared. The results are shown in Table 7.

Table 7

MEAN SIMILARITY BETWEEN SDS CODES AND
OCCUPATIONS CONSIDERED THE FOLLOWING DAY

	SDS I	SDS II	t	P
Males	$\bar{x} = 2.58$	$\bar{x} = 2.00$	2.64	$p < .01$
Females	$\bar{x} = 2.60$	$\bar{x} = 2.26$	2.00	$p < .05$

They are shown separately for males and females since another analysis (to be presented in Table 13) suggested that the code received by males in the SDS II treatment was less consistent with current occupational plans than the code received by males taking SDS I.

Students receiving the regular self-administered version of the SDS (SDS I) list occupations which are more consistent with the information they received. This is particularly significant in the case of the female students because there was no difference between the SDS I and SDS II female groups in the correspondence of their codes with their previous occupational plans. For female students, at least, it is reasonable to conclude that the regular, published version of the SDS influences the occupations that students consider.

Analysis III: Vocational Guidance Questionnaire II. This questionnaire was administered three weeks after the SDS and was intended to assess continuing effects of the treatments. The variables which were included were: number of occupations being considered, time spent thinking about occupations, frequency and variety of information-seeking activities, and finally, for those students who had made a choice, the amount of information acquired about that choice. All but the last variable were analyzed together in the multivariate analysis of variance. The last variable was analyzed separately because a large number of students had not made a choice and could not answer that part of the questionnaire.

Again the goodness-of-fit test did not reject the use of a simple model. The analysis tested the effects associated with the treatment-control differences, the SDS I - SDS II differences, the Student Opinion Form, Vocational Guidance I, and all of the interactions between

the questionnaires and treatments. The blocking factor was also included.

Two factors in the simple model had significant effects on the set of variables included in this analysis. One was the blocking factor; the other was the treatment factor, i.e. the difference between the SDS groups and the control group. The differences between the treatment groups are shown in Table 8. The variable accounting for this treatment-control difference was the number of occupations being considered. Three weeks after taking the SDS (either version) the students were still considering more occupational alternatives than the control group.

The "appropriateness" of the occupations listed by the students receiving SDS I and SDS II on this questionnaire showed again that the students receiving SDS I listed occupations which corresponded more closely to their codes than did those receiving SDS II. (Males $\underline{t} = 4.14$, df 1,316, $p < .001$; Females $\underline{t} = 2.14$, df 1,231, $p < .05$). The absence of differences in information-seeking is disappointing, given the large effects which were observed in students' thoughts about occupations on the day after taking the SDS. It might be attributed, however, to a contaminated control group. The significant difference, observed between SDS groups and controls in their needs for information on the day following the treatment, might have occurred because the experience of being a control subject acted as a treatment which fostered information-seeking. Recall that the control group expressed <u>greater</u> needs than the experimental.

The differences among the experimental and control groups on Banducci's measure of knowledge about occupations were analyzed separately

TABLE 8

MEAN SCORES FOR TREATMENT AND CONTROL GROUPS
ON VOCATIONAL GUIDANCE QUESTIONNAIRE II

Variable	Treatment[a]	Control	Univariate F	Step-Down F
Number of occupations considered	3.43	2.98	25.43***	25.43***
Time Spent thinking about occupational choice	3.47	3.44	1.41	.53
Frequency of Information-Seeking	6.23	5.89	.13	.43
Variety of Information-Seeking	2.47	2.44	.09	1.17

Note: Multivariate F = 6.88; d.f. 4,715; $p < .0001$

[a]Treatment means are based on the SDS I and II groups combined.

*** $p < .001$

and no significant differences were found. (SDS I vs. SDS II, t = 1.78, n.s.; SDS vs. control, t = .43, n.s.)

Summary

The main findings of the experiment are summarized in Table 9, organized according to the desired effects proposed in Table 2. Generally, the important differences were between the SDS groups and the no-treatment group. The differences between the two versions of the SDS were smaller than anticipated. From the user's point of view, this is perhaps encouraging. The self-administered version is less expensive and easier to use and these results suggest that generally it is not significantly different from the more traditional way of presenting information to students. Moreover, in a few specific ways, it is superior. It appears to have more influence in determining the occupations a student considers, and it teaches Holland's theory more successfully. Both of these effects are valuable, since one teaches the student a system that he can use in making future occupational and educational decisions, and the other expands his reasonable occupational options in adolescence when more, reasonable options are advantageous.

Reliability and Validity of the Summary Code

Three aspects of reliability and validity are presented in this section. First, the relationships among the internal scales of the SDS which were demonstrated with the University of Maryland data are briefly reexamined using the data collected with high school students. Second, estimates of test-retest reliability are presented so that the stability of the SDS summary code across weekly fluctuations can be described.

TABLE 9

SUMMARY OF THE EFFECTS OF THE SDS

Criteria	Presentation of Results	SDS Effectiveness
1. Student Evaluation	Table 4	The SDS was evaluated as moderately positive and the evaluation was not affected by the self-directed aspect of the SDS.
2. Understanding of Holland's Theory	Table 4 & 5	Students taking the regular, published version of the SDS demonstrated a better understanding of Holland's theory than students in either the non-self-directed or control groups.
3. Number and Appropriateness of Considered Occupations	Tables 5, 6, 7	Students taking either version of the SDS were considering more occupational alternatives than the control group on the day after the SDS. The difference was still present three weeks later. The occupations listed by the students taking the published version of the SDS were more consistent with their SDS summary codes than were those occupations listed by the students taking the non-self-directed version.
4. Satisfaction and Certainty about Vocational Plans	Table 5	Students taking either version of the SDS report feeling more satisfied with their current occupational choice. Students taking the published version report less need to see a counselor immediately.
5. Need for Information about Specific Jobs and Training Programs	Table 5	Control group expressed greater need than the groups taking either version of the SDS.
6. Information Seeking	Table 7	No effect.
7. Knowledge of Chosen Occupation	P. 26	No effect.
8. Vocational Maturity	Table 7	No effect.

Third, the summary code is validated by comparing it with the student's current vocational plans.

In order to remove computational error from these estimates of reliability and validity, the assessment booklets were checked and re-scored if necessary. Thus, the analyses presented in this section are based on corrected summary codes. Also, wherever possible, incomplete SDS's were completed and included in the analyses. (Almost all students who did not complete the SDS filled out all of the scales but did not do the computations necessary to obtain the summary scales.)

Table 10 shows the correlation matrix of the relationships among all internal scales of the SDS. Correlations based on male and female students are above and below the diagonal respectively. This matrix is essentially a replication of the table 2 in the SDS manual (Holland, 1971) using high school students instead of college freshmen. The interested reader can review the correlations and see that the highest correlations are among the scales measuring the same personality type. With more effort, the hexagonal structure proposed by Holland can also be seen (c.f. Holland, 1969).

Test-Retest Reliability. After the experiment assessing the effects of the SDS was completed, the SDS was given to all participating students. Thus, test-retest information was obtained for those students who were in the SDS I treatment group and who, therefore, had taken the SDS three-to-four weeks previously. Data from the five experimental blocks are combined in this presentation, but male and female students are considered separately.

TABLE 10

CORRELATIONAL MATRIX

	Activities						Competencies						Occupations						Self-Ratings						Summary					
	Ra	Ia	Aa	Sa	Ea	Ca	Rc	Ic	Ac	Sc	Ec	Cc	Ro	Io	Ao	So	Eo	Co	Rsr	Isr	Asr	Ssr	Esr	Csr	Rs	Is	As	Ss	Es	Cs
Activities																														
Ra		24	22	16	19	20	64	20	17	11	18	21	58	21	11	00	23	10	52	15	06	-15	01	-02	67	03	-07	-30	-06	-09
Ia	24		33	25	30	07	39	58	31	23	25	28	31	68	23	13	16	18	14	58	06	-05	-03	03	-01	67	-05	-26	-19	-17
Aa	25	46		42	40	15	29	23	65	35	29	18	23	31	64	22	22	06	-05	07	54	15	03	-00	-09	-00	58	05	-04	-17
Sa	-04	30	43		51	33	23	20	42	62	49	22	18	18	27	36	27	15	-09	01	19	33	18	12	-16	-13	07	44	13	-01
Ea	22	41	51	47		30	31	28	35	56	60	31	24	26	36	35	48	23	03	15	10	25	39	14	-13	-04	-05	14	48	-03
Ca	01	00	-02	21	14		17	03	19	28	26	42	22	04	08	10	37	56	05	-05	02	07	28	44	-03	-23	-14	-01	19	61
Competencies																														
Rc	58	21	24	08	35	10		37	33	30	34	38	49	34	22	08	22	10	45	27	12	-10	06	-02	54	14	-01	-28	-04	-14
Ic	14	59	39	31	40	02	22		25	24	24	23	22	47	23	15	16	08	21	49	05	-03	-01	-01	01	55	-01	-23	-16	-21
Ac	28	36	66	36	47	03	36	43		42	42	33	23	31	66	22	24	16	-04	11	60	19	13	05	-14	-01	58	08	04	-08
Sc	05	27	40	55	52	14	20	34	49		69	29	15	22	28	40	32	18	-06	04	17	37	30	16	-23	-14	00	43	24	-02
Ec	20	33	37	33	64	15	28	36	49	56		37	19	21	28	31	39	16	08	13	14	37	43	12	-14	-09	-02	22	43	-07
Cc	08	04	-02	16	20	55	24	07	20	17	25		24	28	27	22	37	43	02	24	06	03	24	35	-04	06	-07	-16	09	38
Occupations																														
Ro	56	19	20	-03	21	05	42	11	22	11	14	11		44	25	22	41	37	44	22	02	-05	06	07	48	11	-09	-18	-02	-04
Io	22	67	32	19	26	-13	19	49	32	19	20	-08	36		36	24	24	25	12	52	05	-01	-02	00	-04	62	-01	-20	-18	-18
Ao	28	32	66	30	45	-04	18	27	60	34	44	-04	32	35		29	35	18	-09	11	51	10	11	00	-19	02	58	00	03	-15
So	20	32	38	44	45	14	17	27	33	47	43	10	26	28	51		40	28	-09	-03	03	37	19	11	-24	-11	01	45	10	-03
Eo	28	13	24	10	33	19	26	10	24	14	31	09	35	18	40	38		60	07	07	06	13	41	27	-07	-12	-07	02	46	21
Co	17	08	07	14	24	49	22	10	10	13	16	42	36	02	19	34	46		05	13	-02	03	26	45	-08	-01	-18	-09	14	54
Self-Ratings																														
Rsr	34	17	05	02	14	-04	34	07	12	06	15	08	21	19	02	06	06	-01		26	-07	-13	00	-03	72	08	-22	-34	-07	-15
Isr	10	51	18	22	26	05	12	44	21	10	18	08	06	48	15	18	08	04	31		02	-03	-03	04	02	77	-13	-34	-21	-16
Asr	12	23	56	20	23	-14	14	25	63	25	27	-07	09	17	50	14	10	-06	16	24		09	03	02	-13	-09	77	-00	-06	-11
Ssr	07	07	19	37	37	03	14	18	26	43	40	11	05	04	21	35	18	11	11	10	17		29	13	-35	-21	02	67	19	-07
Esr	13	05	13	16	32	21	20	10	11	21	41	25	20	-03	16	21	32	33	15	10	16	28		40	-20	-27	-12	07	67	20
Csr	-07	-15	-17	12	05	55	05	-04	-09	07	12	58	05	-14	-14	05	10	41	01	-05	-20	14	38		-16	-13	-15	-02	20	68
Summary																														
Rs	33	-05	-14	-30	-11	-18	25	-15	-14	-18	-13	-11	24	02	-16	-13	-05	-12	53	-04	-13	-19	-16	-20		01	-16	-35	-16	-15
Is	-02	59	04	-01	02	-26	-10	50	01	-15	-08	-26	-06	61	-01	-09	-14	-25	13	67	01	-20	-26	-31	08		-13	-37	-34	-25
As	20	14	67	09	18	-27	13	13	65	13	15	-23	08	13	60	08	06	-21	-01	01	76	00	-12	-42	-06	01		04	-11	-18
Ss	-11	-16	-04	35	10	-07	-05	-07	-09	32	07	-11	-14	-18	-06	34	-04	-09	-06	-14	-17	58	-05	-05	-14	-20	-15		19	-06
Es	13	-20	-05	-08	34	00	13	-14	-06	11	41	-01	13	-18	04	12	31	13	01	-18	-08	14	55	10	01	-32	-12	07		17
Cs	-15	-31	-40	-09	-19	64	-05	-24	-33	-19	-20	57	00	-33	-38	-14	01	48	-17	-23	-44	-17	08	73	-12	-36	-51	-12	02	

NOTE: Males are above diagonal; Females are below diagonal.

Table 11 shows the test-retest reliability coefficients for the 6 scales in the activities, competencies, occupations and self-estimate sections as well as for the summary scales. Generally, the test-retest reliability coefficients are substantial. There is no personality type or any assessment domain (i.e. activities, competencies, etc.) which is markedly more or less stable than the others. However, the test-retest reliabilities of the scales do tend to be higher for boys than girls. This difference is particularly apparent in the Realistic and Investigative scales.

The summary scales, although they are supposedly a composite of the preceding reliable scales, appear less stable than expected. The instability is probably due to the combining process, which involves ranking the scales in each test, weighting the three highest ranks and then summing these weights. Thus, the summary scores are not consistently affected by changes in the individual scales. For example, if there were near-ties among the scales in a test, a change in only one or two items could change the rank order of two personality types. This difference in rank would then be multiplied by the weighting factors and a large change would occur in the summary scale. On the other hand, a large change in the responses to items which did not change the rank order of the personality types would leave the summary code unchanged. It appears that for these high school students, the former is happening more often than the latter. O'Connell and Sedlacek (1971) report a median correlation of .75 for the test-retest reliability of the summary scales collected at the University of Maryland. This coefficient is higher than the one reported here for either men or women and covers

TABLE 11

TEST-RETEST RELIABILITY OF THE INDIVIDUAL SCALES FOR MALES AND FEMALES

Sex	Male					Female				
Domain	Act.	Comp.	Occ.	Self-Rating	Summary	Act.	Comp.	Occ.	Self-Rating	Summary
Realistic	.72	.81	.67	.77	.81	.63	.45	.41	.74	.62
Investigative	.77	.82	.78	.84	.87	.64	.69	.77	.60	.66
Artistic	.75	.80	.79	.79	.49	.60	.76	.80	.71	.78
Social	.63	.66	.70	.64	.68	.63	.61	.79	.56	.44
Enterprising	.68	.74	.63	.65	.54	.70	.72	.42	.51	.57
Conventional	.75	.75	.76	.49	.31	.54	.76	.67	.55	.72

an even longer time interval. Since they do not report test-retest data for the individual scales, however, it is difficult to determine whether the relative instability of the summary scales observed in these data is a general problem or specific to this population.

While the foregoing reliabilities attest to the stability of the scales in the SDS, it is the stability of the final summary code which is most important to the student taking the SDS. Since the code consists of an ordered arrangement of the three highest personality types found in the summary scales, the stability of the code depends on the stability of the rank order of these summary scales. Therefore, a rank-order correlation of the six summary scales in the test and retest was used to estimate the test-retest reliability of the final code. The mean rank order correlation for boys was .78 (median = .81) and and for girls was .83 (median = .83). These correlations are high, so it appears that the lower reliabilities found in the summary scales' scores did not greatly affect the stability of the final codes. The median rank order correlation reported for the University of Maryland sample of males and females was .92. This difference is consistent with the generalization that interests become more stable with age.

Validity of the SDS summary code. In order to evaluate the validity of the SDS summary code, each student's code was compared to the code of the occupation he listed first in the SDS booklet as his most recent "occupational daydream." The index of similarity described in Table 3 was used to determine the correspondence between the two codes. The students in the five blocks who were assigned to the experimental treatments were combined for this analysis. Results were

computed separately for males and females and for SDS I and SDS II. Since SDS I is the published version of the SDS, these results are of particular interest. Table 12 shows the percentage of cases included at each level of the index of similarity for males and females. The modal category for both males and females was 3, i.e. the first letters of both codes were the same.

One way of evaluating this degree of correspondence obtained with the SDS is to compare it to that obtained with another instrument which has been previously accepted as a valid instrument for research and clinical purposes. Because the summary code obtained in the SDS II treatment was actually based on the students responses to the Vocational Preference Inventory, this sort of comparison is possible. The validity of the VPI has been previously described (Holland, 1965) and continues to be demonstrated in the successful experiments of vocational preference where it is used. The VPI also yields a three-letter summary code and the same index of similarity can be applied to describe its correspondence with students' occupational daydreams. The mean indexes of similarity between the summary codes and occupational daydreams obtained with the SDS and VPI are shown in Table 13. Means are shown separately for males and females.

For girls the results are as expected. The SDS code is similar to the VPI code in its correspondence with the students' recent daydreams about occupations. For boys, however, there is a significant difference between the two. The SDS summary code corresponds with students' occupational daydreams more closely than the VPI ($t = 2.42$, df 1,359, $p < .02$). This is encouraging in that the SDS, with its additional

TABLE 12

Proportion of Students at Each Level of Similarity
between SDS Summary Code and Occupational Daydream

	SDS I (N=366)			
	Male	Cumulative %	Female	Cumulative %
0 1st letter of SDS code is not included in other (e.g. RIC, CES)	.16		.12	
1 1st letter of SDS code matches any letter in the other code (e.g. RIC, CRE)	.15	83	.17	88
2 1st and 2nd letters of SDS code match any two letters in the other code (e.g. RIC, IER)	.10	68	.20	71
3 1st letter of SDS code matches first letter of other code (e.g. RIC, REA)	.23	58	.23	51
4 Letters of SDS code match letters of other code in any order (e.g. RIC, ICR)	.12	35	.14	28
5 1st and 2nd letters of SDS code match 1st and 2nd letters of other code (e.g. RIC, RIE)	.14	23	.05	14
6 Letters and order exactly the same (e.g. RIC, RIC)	.09	9	.09	9

Table 13

Mean Indexes of Similarity between

Occupational Daydreams and Summary Codes.

	SDS I	VPI	t	
Boys	$\bar{x}$ = 2.75	$\bar{x}$ = 2.32	2.42	p < .02
Girls	$\bar{x}$ = 2.58	$\bar{x}$ = 2.53	.23	n.s.

scales, appears to be an improved measure of a student's vocational preferences.

For the purposes of this study, however, the discrepancy between the VPI and SDS codes is somewhat disconcerting. In designing the experimental treatments, it was assumed that the two versions of the SDS would present the same information to the students, differing only in the way that information was presented. This discrepancy indicates that, for boys, the quality of information may have differed in the two treatments and adds another plausible explanation for the differences observed between the two treatments.

Additional Considerations

In compiling the data for this analysis, two administrative problems were encountered: (1) failure to complete the assessment booklet, and (2) errors in the computation of the final summary code.

The proportion of students from each experimental block who did not complete the SDS is shown in the first row of Table 14. In Blocks 0, 1, and 4, representing a girls' Catholic High School, a boys' Catholic High School, and a boys' advanced college prep school, the non-completion rate did not exceed two percent. The highest non-completion rates were in Blocks 2 and 3, which represent two different grades in the same inner-city high school. The instances of non-completion in this high school were considered for each curriculum group separately. The percentage of non-completing students in each curriculum group was as follows: General 28%, Technical 26%, Business 14%, Academic 10%. The non-completions, then, were most prevalent among the students in the general and technical curricula.

The difficulties in this high school may be partly attributed to the administration procedure. This was the largest group of students tested at one time and the administrative hardships were more severe here than at the other schools. It was probably more difficult for a student to seek assistance and easier for him to feel that his difficulties were going unnoticed. We have a report from a classroom teacher in another city who administered the SDS to a class of 27 inner-city job opportunity students using a more favorable administrative technique. He worked closely with his students for two class periods giving them assistance wherever he thought it necessary. An examination of the SDS's from his class shows that only 3 out of 27 failed to complete it.

In almost all cases, students who did not complete the SDS stopped at the point in the assessment booklet where they were instructed to compile the results of the individual scales into summary scales. Our observations of students' computational errors also indicate that this final summary is the area where computational errors were most prevalent.

The computational errors made by students in the 4 blocks have been arranged according to severity and are shown in the lower part of Table 14. A scale from 0 to 6 describes the degree of discrepancy between the code computed by the student and his correct code. Zero represents a serious error in that the first and most important letter is not included in his code. Six represents no error. Because the occupations in the occupational classification are arranged by 1st letters and then by 2nd and 3rd letters with that first-letter arrangement, errors coded 0, 1, and 2 are the most serious. In these cases,

TABLE 14

PROPORTION OF NON-COMPLETION AND COMPUTATIONAL ERRORS OBSERVED IN THE 5 EXPERIMENTAL BLOCKS

	Block 0 Soph. Girls Catholic HS	Block 1 Soph. Boys Catholic HS	Block 2 Juniors, Inner-City Public HS Girls	Block 2 Juniors, Inner-City Public HS Boys	Block 3 Seniors, Inner-City Public HS Girls	Block 3 Seniors, Inner-City Public HS Boys	Block 4 Junior Boys Accelerated Cur.
% not completing SDS	.00	.01	.11	.34	.21	.23	.02
Errors in Summary Code Arranged by Severity	N = 131	N = 199	N = 80	N = 64	N = 91	N = 68	N = 98
0 1st letter not included	.01	.03	.04	.11	.09	.12	.03
1 1st letter present but incorrect position	.00	.02	.01	.05	.04	.00	.00
2 1st 2 letters present but out of order	.01	.04	.06	.06	.03	.09	.05
3 1st letter correct	.05	.06	.10	.11	.15	.15	.07
4 all letters correct order wrong	.25	.14	.21	.12	.20	.15	.13
5 1st 2 letters correct	.12	.11	.14	.09	.10	.19	.18
6 (no errors)	.54	.61	.44	.45	.38	.31	.52

Note: a) Complete descriptions of exp't. blocks is in Table 1 and the scale for severity of errors is described on p. 19.

b) These percentages are based on all completed SDS's excluding retests.

the students may never look at the pages in the occupational classification which list the most appropriate occupations. Conversely, errors 3, 4, and 5 are less serious.

The number of computational errors is surprisingly large, but most were of the less serious type (i.e. most errors were coded 3, 4, and 5). As a whole, 12% of the students who completed the SDS made serious computational errors, while 88% either made no errors or those of the less serious type. In the inner-city school, 17% made serious computational errors while 83% made either no errors or errors of the less serious type.

Most errors occurred when the students attempted to combine their individual scale scores into the final summary scale. The students with major errors in their summary codes showed no evidence of following the printed directions at this point. The less serious summary code errors generally resulted from the students' failure to resolve tied scores correctly.

The classroom teacher who administered the SDS to his job opportunity class again demonstrates that improved administration procedures may help to overcome these difficulties. In his class, 50% computed their codes correctly and the others made the less serious types of errors (codes 3, 4, and 5).

REFERENCES

Banducci, R. Accuracy of sterotypic perceptions of types and levels of occupations in relation to background and personal characteristics of high school senior boys. Unpublished doctoral dissertation, University of Iowa, 1968.

Clarke, R., Gelatt, H. B., & Levin, L. A Decision-making paradigm for local guidance research. Personnel and Guidance Journal, 1965, 44, 40-51.

Crites, J. O. The maturity of vocational attitudes in adolescence. University of Iowa, Iowa City, 1969.

Edwards, K. J. & Whitney, D. R. A structural analysis of Holland's personality types using factor and configural analysis. Journal of Counseling Psychology, 1972, in press.

Froehlich, C. P. Toward more adequate criteria of counseling effectiveness. Educational and Psychological Measurement, 9, 1949, 255-267.

Holland, J. L. Manual for the Vocational Preference Inventory. (6th Rev.) Palo Alto, California: Consulting Psychologists Press, 1965.

Holland, J. L. The Psychology of Vocational Choice. Waltham, Massachusetts: Blaisdell, 1966.

Holland, J. L. A Counselor's Guide for the Self-Directed Search. Palo Alto, California: Consulting Psychologists Press, 1971.

Holland, J. L. A Theory-Ridden, computerless, impersonal vocational guidance system. Journal of Vocational Behavior, 1, 1971.

Holland, J. L., & Baird, L. L. An interpersonal competency scale. Educational and Psychological Measurement, 1968, 28, 503-510.

Holland, J. L., Viernstein, M. C., Kuo, H., Karweit, N. L., & Blum, Z. D. A Psychological classification of occupations. Center for Social Organization of Schools, Report No. 90, The Johns Hopkins University, Baltimore, Maryland, 1970.

Holland, J. L., Whitney, D. R., Cole, N. S., & Richards, J. M., Jr. An empirical occupational classification derived from a theory of personality and intended for practice and research. ACT Research Report No. 29. Iowa City, Iowa: The American College Testing Program, 1969.

Hosford, R. E., & Briskin, A. S. Changes through counseling. Review of Educational Research, 1969, 39, 2: 189-209.

Hoyt, D. P. An evaluation of group and individual programs in vocational guidance. Journal of Applied Psychology, 1955, 39, 26-30.

Krumboltz, J. D., & Schroeder, W. W. Promoting career planning through reinforcement and models. Personnel and Guidance Journal, 1965, 44, 19-26.

Loughary, J. W., Friesen, D., & Hurst, R. Autocon: a computer-based automated counseling simulation system. Personnel and Guidance Journal, 1966, 45, 6-15.

Nissenson, N. An evaluation of some aspects of a group vocational guidance program. Unpublished Masters thesis, Northwestern University, 1948.

O'Connell, T. J., & Sedlacek, W. E. The reliability of Holland's Self-Directed Search for Educational and Vocational Planning. Counseling Center Research Report No. 6-71, University of Maryland, 1971.

Ryan, T. A. Effect of an integrated instructional counseling program to improve vocational decision-making of community college youth. Cooperative Research Project No. HRD 413-65 5-0154. Oregon State University, 1967.

Travers, R. M. A critical review of techniques for evaluating guidance. Educational and Psychological Measurement, 9, 1949, 211-225.

Tyler, R. W. Principles involved in evaluating student personnel services. Student Personnel Services in Colleges and Universities. Chicago: University of Chicago Press, 1942.

Williamson, E. G., & Bordin, E. S. The evaluation of vocational and educational counseling: a critique of the methodology of experiments. Educational and Psychological Measurement, 1941, 1, 5-24.

Wrenn, C. G., & Darley, J. G. Pupil Personnel, Guidance and Counseling. Review of Educational Research, 1942, 12, 45-65.

APPENDIX

Student Interest Questionnaire

Student Opinion Form

Vocational Guidance Questionnaire I

Vocational Guidance Questionnaire II

STUDENT INTEREST QUESTIONNAIRE

Please complete:

Name_____

Male_____ Female_____ (check one)

Age_____ Grade_____

High School_____

Please read the following questions carefully and mark your answer in the space provided.

1. What is your father's occupation?_____

2. What is your mother's occupation?_____

3. What courses are you taking this term?

_____ _____

_____ _____

_____ _____

4. On the average, what grade have you received in high school courses?
   Circle one: A B+ B C+ C D+ D

5. Would you be interested in trying out a new vocational guidance program? Yes_____ No_____

6. Place a check (✓) on the line beside each activity to indicate how much time you would be willing to devote to each activity.

	1 hr.	2 hrs.	3 hrs.	4 hrs.	5 hr.	more if necessary
Reading books about occupations						
Taking vocational interest tests						
Talking with a vocational counselor						

Student Opinion Form

Only students who have taken the SDS are asked to answer the following items:

1. Place a check (✓) on the line next to each statement to show the extent to which you agree with it.

   a. I feel more sure about my occupational choice now than I did before taking the SDS

   Strongly Agree | Agree | Neutral | Disagree | Strongly Disagree

   b. I see now that my first choice may not be the best choice for me

   Strongly Agree | Agree | Neutral | Disagree | Strongly Disagree

   c. I see more occupational choices now than I did before taking the SDS

   Strongly Agree | Agree | Neutral | Disagree | Strongly Disagree

   d. I would recommend taking the SDS to a friend who wanted vocational guidance

   Strongly Agree | Agree | Neutral | Disagree | Strongly Disagree

   e. My SDS summary code seems reasonable for me

   Strongly Agree | Agree | Neutral | Disagree | Strongly Disagree

2. My SDS summary code was ___ ___ ___ which stands for _____, _____, _____.

3. All in all, I think taking the SDS was helpful because _____ _____.

4. Taking the SDS was not helpful, because_____ _____.

5. The thing I liked best about the SDS was _____

_____.

6. The thing I disliked most about the SDS was _____

_____.

Name:_____

Vocational Guidance Questionnaire I.

Read each of the questions carefully and write your answer in the space provided.

1. List all of the occupations you are considering right now.

_____

_____

_____

_____

_____

2. Which occupation is your first choice? (If undecided, write "undecided.")

_____

3. How satisfied are you with your present choice of a career?

_____Well satisfied

_____Moderately satisfied

_____Dissatisfied but intend to remain

_____Dissatisfied and intend to change

_____Undecided about future vocation

4. Do you feel that you need to talk to a counselor about your vocational choice?

Immediately	Within the next week	Within the next month	Sometime before Graduation	No need

5. Do you feel that you understand what kind of occupations are suitable to your personality?

Very well	Rather well	Fairly well	Not very well	Not at all

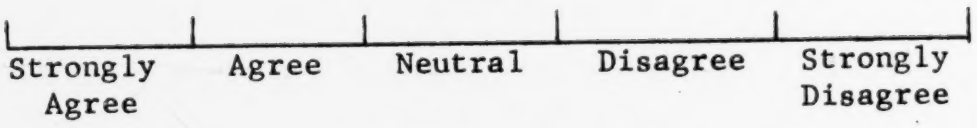
6. Beside each of the occupations listed below, write the letter of the personality type which is best suited to it.

Occupations	Personality types
_____ 1. Salesman	I. investigative
_____ 2. Mechanic	A. artistic
_____ 3. Teacher	S. social
_____ 4. Chemist	E. enterprising
_____ 5. Musician	C. conventional
_____ 6. Accountant	R. realistic

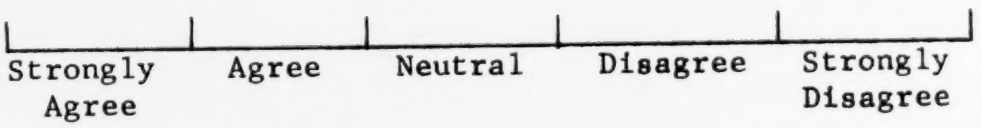
7. Check (✓) the extent to which you agree with the following statements:

	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
A. The business of choosing an occupation is very confusing and I don't know where to begin					
B. I would like to know much more about myself before I begin choosing an occupation					
C. I need to know much more about occupational opportunities and requirements					

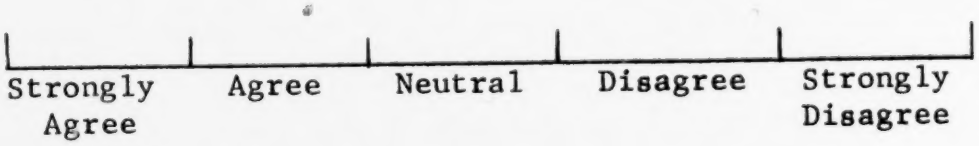
D. I would like to know what one or two specific occupations are all about



E. I have some ideas about what I'd like to do but I need information about the training or education required



F. I need information about available training programs or colleges I might attent



8. Read each statement. If you think it is true, circle "T". If you think it is false, circle "F".

T F By the time you are 15, you should have your mind pretty well made up about the occupation you intend to enter.

T F You can't go very far wrong by following your parents' advice about which job to choose.

T F If you have some doubts about what you want to do, ask your parents or friends for advice and suggestions.

T F I have little or no idea of what working will be like.

T F Choose a job which allows you to do what you believe in.

T F The most important part of work is the pleasure which comes from doing it.

T F When I am trying to study, I often find myself daydreaming about what it will be like when I start working.

T F Choose an occupation, then plan how to enter it.

T F I spend a lot of time wishing I could do work that I know I cannot ever possibly do.

T F I want to really accomplish something in my work--to make a great discovery or earn lots of money or help a great number of people.

T F When it comes to choosing a job, I'll make up my own mind.

T F I'm not going to worry about choosing an occupation until I'm out of school.

T F The greatest appeal of a job to me is the opportunity it provides for getting ahead.

T F Once you choose a job, you can't choose another one.

T F In order to choose a job, you need to know what kind of person you are.

T F Work is dull and unpleasant.

T F I am having difficulty in preparing myself for the work I want to do.

9. Read each statement. If it describes you, circle "T" (true). If it does not describe you, circle "F" (false).

T F I have a reputation for being able to cope with difficult people.

T F I find it easy to play many roles--student, leader, follower, church goer, athlete, traveler, etc.

T F People seek me out to tell me about their troubles.

T F I think I have unusual skills for making groups, clubs, or organizations function effectively.

T F I think I have unusual skill for assessing the motivation of other students.

T F I have a clear picture of what I am like as a person.

T F My physical health is excellent.

T F Most of the time, I have an optimistic outlook.

T F My friends regard me as a person with good practical judgment.

Name_____

Vocational Guidance Questionnaire II.

Part I

1. List all of the occupations you are considering right now.

_____

_____

_____

_____

_____

2. During the past three weeks, have you spent more or less time than usual thinking about yourself and your occupational future?

Much Less Time	Less time	About the Same	More time	Much More Time

3. Answer the following questions by checking "Yes" or "No." Then, if you check "Yes," answer "How Many Times?"

	Yes	No	How Many Times?
Example: Have you applied for a job within the past three weeks?	✓		1
A. Within the past three weeks have you talked with other students about yourself and your career opportunities?			
B. Within the past three weeks have you talked with your parents about yourself and your career opportunities?			
C. Within the past three weeks have you read or sent for brochures or books on jobs or occupations?			
D. Within the past three weeks have you read or sent for brochures or catalogues for college or other training programs?			

	Yes	No	How Many Times?
E. Within the past three weeks, have you visited or made plans to visit colleges, training institutions or places of employment?			
F. Within the past three weeks, have you watched any TV programs, seen exhibits, shows, or radio programs with information relevant to occupations or colleges?			
G. Within the past three weeks, have you made an appointment to see a vocational counselor?			

4. Right now, what is your first occupational choice?

(If undecided, write "Undecided" and do not answer Part II of the questionnaire.)

Part II

This part of the questionnaire is about the occupation you have chosen (or are seriously considering). Think about the workers in that occupation as you answer the following questions.

A. Interests

To answer the following items you must compare two descriptions of work activities and choose the one which workers in your occupation would prefer. Draw a circle around the number of your choice. Not all of the items will apply to your occupation so if you cannot make a choice, leave the item blank. For example, in the first choice, you will circle either 1 or 6. However, if you cannot make a choice, you will leave the item blank. Try to answer three or four items.

Workers in this occupation would prefer work activities:

1. Dealing with things and objects	VS	6.	Concerning people and the communication of ideas
2. Involving business contact with people	VS	7.	Involving scientific and technical experiences

3.	Involving specific, routine, organized work	VS	8.	Involving general, theoretical, or creative work
4.	Working for people for their presumed good, like social work, or dealing with them in social situations	VS	9.	Working on nonsocial tasks, carried on with processes, machines, and techniques
5.	Resulting in achieving prestige or the esteem of others	VS	10.	Resulting in definite productive satisfaction for the worker
11.	I don't know the kinds of activities and experiences which workers in this job prefer.			

B. Temperaments

Put a check beside the occupational situations which workers in this job encounter. Note: Do not check more than <u>four</u> situations.

_____ 1. A variety of duties, with frequent change.

_____ 2. Repeated, shortcycle operations, performed with set procedures.

_____ 3. Doing things only under instruction, little room for worker judgment.

_____ 4. Directing and planning an activity or the activity of others.

_____ 5. Dealing with people beyond giving and receiving instructions.

_____ 6. Working alone and apart from others, although work may later be integrated with that of others.

_____ 7. Influencing people in their opinions, attitudes, or judgments.

_____ 8. Performing adequately when face-to-face with a critical or unexpected situation.

_____ 9. Using own judgment to evaluate information and make a decision.

_____ 10. Using some test or standard to evaluate information and make a decision.

_____ 11. Using personal viewpoint to interpret feelings, ideas, or facts.

_____ 12. Meeting precise, set limits, tolerances, or standards.

_____ 13. I don't know the temperaments to which workers on this job must adjust or regulate.

C. General Education

1. Reasoning Skills

Put a check beside the one statement which best applies to this occupation. Note: Do not check more than one statement.

A person in this occupation needs to be able to:

_____ 1. Carry out simple instructions. Little decision-making.

_____ 2. Carry out detailed but uninvolved instructions. A few decisions are made.

_____ 3. Carry out instructions given in written, oral, or diagram form. Several decisions are made.

_____ 4. Solve practical problems by applying principles. Interpret a variety of instructions.

_____ 5. Use principles to define problems, establish facts, and draw conclusions. Interpret technical instructions, manuals, math formulas, and diagrams.

_____ 6. Apply logical or scientific thinking to a wide range of problems. Interpret theoretical ideas in difficult forms.

_____ 7. I don't know the degree of reasoning needed for the average successful performance of this occupation.

2. Math Skills

Put a check beside the one statement which best applies to this occupation. Note: Do not check more than one statement.

A person in this occupation needs to be able to use:

_____ 1. Simple adding and subtracting; reading, copying numbers; counting and recording.

_____ 2. Adding, subtracting, multiplying, and dividing.

_____ 3. Fractions, decimals, and percentages.

_____ 4. Arithmetic, algebra, and geometry.

_____ 5. Advanced math and statistical techniques (calculus, probability, theoretical concepts).

_____ 6. I don't know the degree of mathematics needed for the average successful performance of this occupation.

3. Language Skills

Put a check beside the <u>one</u> statement which best applies to this occupation. Note: Do not check more than <u>one</u> statement.

A person in this occupation needs to be able to:

_____ 1. Learn from instructions; perform simple writing tasks.

_____ 2. File and mail; interview others.

_____ 3. Fill in report forms; copy from one record to another; work easily with forms.

_____ 4. Interpret drawings, layouts, technical manuals, specifications, blueprints, and so forth.

_____ 5. Prepare and deliver lectures; interview, counsel, or advise people; report and write articles; and evaluate technical data.

_____ 6. I don't know the degree of language skill needed for the average successful performance of this occupation.

D. Training Requirements

Put a check beside the <u>one</u> most common time period that applies to training for this occupation.

_____ 1. Short demonstration period only.

_____ 2. Anything beyond a short demonstration to 30 days.

_____ 3. Over 30 days to 3 months.

_____ 4. Over 3 months to 6 months.

_____ 5. Over 6 months to 1 year.

_____ 6. Over 1 year to 2 years.

_____ 7. Over 2 years to 4 years.

_____ 8. Over 4 years to 10 years.

_____ 9. Over 10 years.

_____ 10. I don't know the amount of time required to learn this occupation.